

NISTH Newsletter

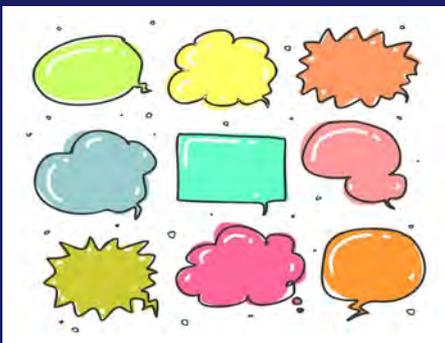
Issue 6: March 2021

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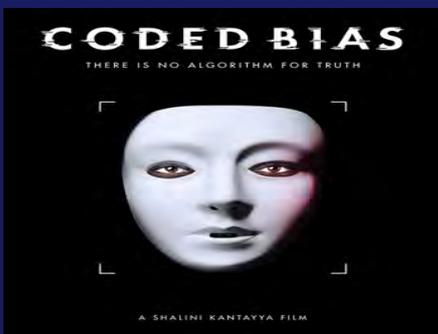
Protecting Nature in and around Cities



NISTH Colloquy



Coded Bias



Associate Director's Message



The Associate Director of NISTH, **Associate Professor Hallam Stevens**, is the Associate Chair (Research) and the Head of History at the School of Humanities at NTU. He is also the Co-Director for Artificial Intelligence Research Institute (AIR), Data Science and Artificial Intelligence Research Centre, NTU (DSAIR). His research centers around genomics, the life sciences, big data, and the history of computers. At NTU he teaches classes on these topics as well as on food history and history of science and technology.

Over the several months since our last newsletter, NISTH has continued to pursue a wide range of activities across the University. As we gradually move out of the shadow of the COVID-19 pandemic and into the “new normal,” we anticipate seeding an even wider array of events, both online and in person.

Notably, our NISTH “Think Out” debate series continued in February with a lively discussion between Associate Professor Josip Car of the Lee Kong Chian School of Medicine and Professor May O. Lwin from the Wee Kim Wee School of Communication and Information. Professors Car and Lwin examined how digital tools might best be utilized in health care settings, from personalized medical-digital assistants to AI-assisted doctors. If you missed the debate, you can find it online [here](#).

Over the next few months, we expect the debate series to evolve and take on some different forms and formats. In particular, at the suggestion of our NISTH fellow Monamie Bhadra Haines, we are planning an event centred around the screening of the film *Coded Bias*, released in 2020 at Sundance and directed by Shalini Kantayya. Beginning with the problem of facial recognition, the film explores the growing problem of bias in algorithms. As Singapore rolls out more Smart Nation technology, including AI-based algorithms, recognizing and countering such biases is going to be an increasingly important problem.

We invite any NISTH fellows who have other promising ideas for events that examine the effects of science and technology on humanity – guest speakers, panel discussions, debates, movie screenings – to get in touch with the NISTH team.

In addition to these events, NISTH has also been supporting a series of research grants to fund interdisciplinary projects on campus. In February, we closed a call for research projects that would develop novel ways of addressing the growing worldwide problem plastic waste. This call was sponsored by the Alliance to End Plastic Waste. This is, we hope the beginning of a lasting partnership that will allow NTU to become a leading centre in this domain of research. The outcome of this funding will be announced in April.

Beyond plastic, NISTH is deepening its interests in the ethical, social, and political effects of artificial intelligence. In March, we closed a joint call with NTU’s Artificial Intelligence Research Centre (AIR, where I also serve as co-director) on the topic of “AI for Social Good.” The domains of “responsible AI” and “AI for good” are growing in importance worldwide as there is increasing recognition of the potentially socially transformative effects of these new technologies. NISTH hopes that opportunities such as this one will seed critical research in this emerging field.

The common theme here, of course, is fostering more and deeper conversations across and beyond the University about the social impacts of science and technology. If nothing else, the pandemic has made clear that the world faces critical problems that cannot be solved by tech alone. To take an obvious but immediately relevant example, it is no good having a vaccine for COVID-19 if many people in the population refuse to take the jab. Problems of “vaccine reluctance,” need interdisciplinary solutions.

NISTH aims to foster and support such work through supporting research, fostering team-building, developing education, and building partnerships between the government, the private sector, and the University.

Protecting Nature in and around Cities - Perrine Hamel



Perrine Hamel is a NISTH Fellow and Assistant Professor at NTU's Asian School of the Environment (ASE). Her research group examines how green infrastructure can contribute to creating resilient and inclusive cities in Southeast Asia. She aims to illuminate the relationships between people and nature to promote nature-based solutions in urban planning decisions.

Protecting nature is hardly controversial. Not many people hate nature so much that they want to clear forests or harm wildlife for the sake of it. So why is it that we are degrading our environment at an unprecedented rate, having altered 75% of the global land surface and lost 85% of wetlands in the last century? Why is it so that all the benefits we derive from nature, such as clean water, clean air, food, mitigation of climate extremes, are declining so rapidly?

At the risk of stating the obvious, the answer may be that environmental conservation, and ultimately human-nature relationships, are complex issues. Are we separate from nature, therefore capable of degrading or protecting it? Or are we part of nature—implying the need for us to understand how we impact and depend on our environment in tangible and non-tangible ways?

While these questions can be deeply philosophical, they also have very practical implications when one considers urban planning and rapidly growing cities. Global urban growth was responsible for the loss of over 190,000 km² of natural habitat in the 1990s, more than the size of Cambodia. Another 290,000 km² are expected to be lost by the time we reach 2030—and this does not count encroachment on other types of land. With the global urban population expected to grow by 2.4 billion by 2050, more impacts on our environment are inevitable.

Nature within and around cities

When planning for future cities, the question of how we interact with nature becomes more practical: for example, should urban growth be mainly “upward” or “outward”? Upward growth—building high-density, compact cities—has obvious benefits when it comes to limiting encroachment on high biodiversity areas or agricultural lands, while also improving efficiency (less infrastructure is needed to serve more densely populated areas).

Yet building more compactly does not come without its challenges. Green spaces in cities are not only praised for their recreational and aesthetic value, they also provide important benefits for micro-climate, flood risk, water quality, and urban biodiversity. Conflicts over land use therefore arise in cities aiming to build more densely. For example, although Singapore generally promotes upward growth, conflicts over land use still emerge, as recently as this year when environmental activists challenged the redevelopment of forested areas.

Irrespective of the type of growth, land use conflicts may also raise equity questions when land is used to the benefit of specific segments of population. A recent example is in Siem Reap, Cambodia, where a large touristic resort planned next to heritage-listed Angkor Wat raises important questions about who gains and who loses from development.

Valuing nature and improving urban governance

Given the scale of urban growth in Asia, a mix of upward and outward growth is expected. In this context, identifying where cities should develop, and for what purpose, remain important open questions for urban planning. I see two important avenues of research and action to help us address these questions. One aims to better understand the benefits of nature, in and around cities, such as recreation, heat and flood risk mitigation, or habitat for biodiversity. New developments in urban ecology, hydrology, climate science and social sciences make it increasingly feasible to quantify these benefits, termed “ecosystem services”, and compare future urban scenarios accordingly.

More intangible nature’s contributions to people should also be considered (the term “contributions” is now favored by many people to move away from the idea of nature providing “services”). These contributions may take the form of cultural heritage and ways of life that are directly inspired or dependent on nature (a sacred river, a mountain symbolizing a country, a cosmogony influencing people’s values). Both tangible and intangible benefits are increasingly well captured and further research will help mainstream this information into urban planning.

The second area of research relates to urban governance, namely empowering citizens and decision-makers to make informed choices about urban development. This idea is supported by many examples of successful land use regulations that effectively reduced uncontrolled growth and unwanted impacts on the environment. Creating and nurturing the conditions for such regulations to be implemented involves work on several dimensions: education (from primary schools to city officials and private developers), a mindset of learning and experimentation, encouraging environmental stewardship through participatory management approaches, among other things.

Good governance for nature will not avoid trade offs, which are inevitable when seeking solutions to multi-faceted issues. But better understanding of the relationship between humans and nature, at different spatial and temporal scales, will help cities and countries make informed decisions about urban development and nature protection.

NISTH Colloquy

The Global Young Scientist Summit (GYSS) - 12 – 15 Jan 2021

Science and Policy



**GLOBAL YOUNG
SCIENTISTS
SUMMIT**
SINGAPORE
12 - 15 JAN 2021

21 SPEAKERS
500 PARTICIPANTS
30 COUNTRIES
18 PLENARIES
5 PANELS



The Global Young Scientist Summit (GYSS) 2021, was held virtually from 12 – 15 Jan 2021. **Prof Vanessa Evers**, Director, NISTH, moderated the panel session on ‘Science and Policy’ with Dr Venki Ramakrishnan (Nobel Laureate for Chemistry, 2009) and Prof Tan Chorh Chuan (Executive Director of the Office of Healthcare Transformation & the First Chief Health Scientist at the Ministry of Health).

Watch all the panel discussions at: <https://www.youtube.com/playlist?list=PLXusWh0JoRx8QyXsFZzTvduxaMqyWDxuc>

Watch the plenary lectures at: https://www.youtube.com/playlist?list=PLXusWh0JoRx8BiZlPraHwA7sCOZQJYO_g

Youth & Leaders Summit - 19 January 2021

Governing New Technologies for a more secure world



The panel on 'Governing New Technologies for a more secure world', was part of the Sciences Po's Paris School of International Affairs (PSIA), flagship Youth & Leaders Summit, held online from 18 - 20 January 2021.

The panel was chaired by *Stéphanie Balme* (Dean of Undergraduate Studies, Sciences Po; PSIA Faculty) with panelists: *Bruno Căitucoli* (Retired French Air Force General Officer; Advisor to the CEO at EDF-Renewables France); *Vanessa Evers*, (Director, NISTH); *Alexandra Geese* (Member of the European Parliament), *Casper Klynge* (Vice President of European Government Affairs, Microsoft); *Marusa Rus* (PSIA student, Master in International Public Management); *Jamie Susskind* (author of “Future Politics: Living Together in a World Transformed by Tech” (Oxford, 2018)). It discussed the topic from 3 approaches a research-based, political and a practical one. NISTH Director, Prof Vanessa Evers, shared her research perspective on new technologies and their diverse applications.

Watch the full discussion at: <https://www.sciencespo.fr/psia/content/governing-new-technologies-more-secure-world.html>

NISTH Think Out: Debate Series - 21 January 2021 Digital Assistants in Healthcare



The third debate on Digital Assistants in Healthcare discussed the subject contention: *What is the role of digital assistants in promoting health and healthcare?* The presenters, Assoc Prof Josip Car and Prof May O Lwin, deliberated the topic drawing from their own research and also quoting interesting examples and analogies to substantiate their comments. The audiences' questions mostly revolved the extent of information collection and usage.

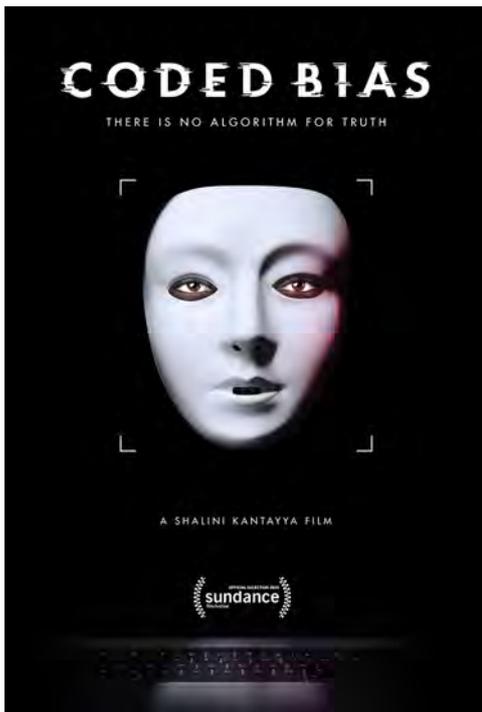
CAIDG Showcase 2021 Series - 19 February 2021 Tracing Community Disquiet in the Age of Covid-19



Center for AI and Data Governance (CDAIG) at the Singapore Management University (SMU) organised a webinar series, with 5 sessions. Associate Director, NISTH, **Assoc Prof Hallam Stevens** and NISTH Fellow, **Asst Prof Monamie Bhadra Haines** were part of a panel for 'Session 1 - Tracing Community Disquiet in the Age of Covid-19', on 19 Feb 2021.

The panel discussed how the proliferation of surveillance technology during the COVID-19 pandemic has resulted in a myriad of responses from the public. Prof Stevens shared his insights on the different sources of public disquiet related to the technology deployed and its accompanying control responses; including data collection/use, woes surrounding current tech, and what the 'new normal' will look like. Other panelists included, Prof Eugene K B Tan (SMU Law), Research Fellow Muhammad Faizal Abdul Rahman (RSIS) and Mr Lazarus Chok (NYU Centre for Urban Science and Progress).

Coded Bias questions the impact of AI on our Liberties and the consequences on marginalised communities.



Shalini Kantayya's 'Coded Bias', provides an eye-opening view into the growing dependence and 'interference' of Artificial Intelligence (AI) in our everyday lives.

AI algorithms are now becoming increasingly ubiquitous and powerful. They can mimic human perception, problem-solving, decision-making and learning capabilities. However, the most basic algorithm is written by humans, and more often than not, their prejudices and biases are transferred to the AI being created. Coded Bias explores the growing bias in algorithms, particularly in facial recognition.

As countries invest more into becoming digitally astute and technologically savvy, the need to recognise, regulate and counter algorithmic bias is of utmost importance.

Coded Bias, released at the Sundance Film Festival in 2020, has won accolades including, the Critics Choice Award Nomination for Best Science Documentary, the NYWIFT Excellence In Filmmaking Award, Hamptons International Film Festival, the Grand Jury Prize, Best International Documentary, Calgary

International Film Festival and the Filmmaker Award, at the Globedocs Film Festival.

Given the growing importance and prevalence of AI in Singapore, NISTH will be organising an event, with a panel discussion based on a special screening of the documentary itself.

Synopsis:

When MIT Media Lab researcher Joy Buolamwini discovers that many facial recognition technologies misclassify women and darker-skinned faces, she is compelled to investigate further and start the Algorithmic Justice League. It turns out that artificial intelligence, which was defined by a homogeneous group of men, is not neutral. What Buolamwini learns about widespread bias in algorithms drives her to push the U.S. government to create the first-ever legislation to counter the far-reaching dangers of bias in a technology that is steadily encroaching on our lives.

Centering on the voices of women leading the charge to ensure our civil rights are protected, Coded Bias asks two key questions: what is the impact of Artificial Intelligence's increasing role in governing our liberties? And what are the consequences for people stuck in the crosshairs due to their race, color, and gender?

Director/Producer Shalini Kantayya's feature documentary, Coded Bias, premiered at the 2020 Sundance Film Festival. She directed an episode of the National Geographic television series Breakthrough, Executive Produced by Ron Howard, broadcast globally in 2017. Her debut feature film Catching the Sun, premiered at the Los Angeles Film Festival and was named a New York Times Critics' Pick. Catching the Sun released globally on Netflix on Earth Day 2016 with Executive Producer Leonardo DiCaprio, and was nominated for the Environmental Media Association Award for Best Documentary.

Kantayya is a TED Fellow, a William J. Fulbright Scholar, and a finalist for the ABC Disney DGA Directing Program. Kantayya finished in the top 10 out of 12,000 filmmakers on Fox's On the Lot, a show by Steven Spielberg in search of Hollywood's next great director. She is an Associate of the UC Berkeley Graduate School of Journalism.



www.shalinikantayya.net

HAPPENINGS: Get Involved!



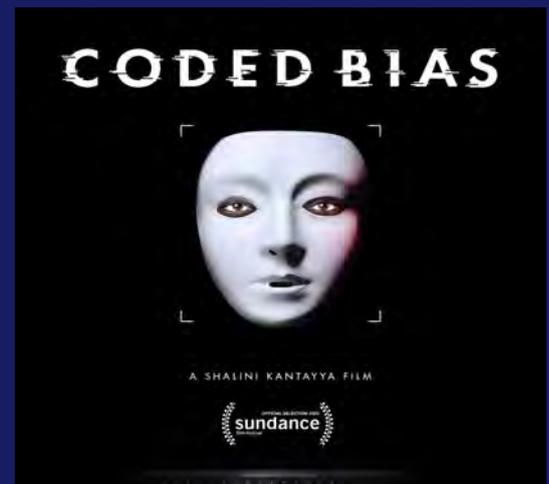
NISTH Think Out

We are now expanding the 'NISTH ThinkOut' event format and are eager to have you participate in them. If you have an event that you would like to organise that is interdisciplinary and needs assistance, NISTH will be happy to organise it with you. Alternatively, we are open to your innovative and 'out-of-the-box' suggestions / ideas on events that you would like for us to organise. Please feel free to email us with your inputs at: NISTH-events@ntu.edu.sg

Coded Bias

Coded Bias explores the fallout of MIT Media Lab researcher Joy Buolamwini's startling discovery that facial recognition does not see dark-skinned faces and women accurately, and her journey to push for the first-ever legislation in the U.S. to govern against bias in the algorithms that impact us all. NISTH will be organising a special screening of the documentary and discussion on the growing importance and prevalence of AI in Singapore. More information can be found at:

www.codedbias.com/



NISTH Connect

If you need assistance in putting in grant proposals, finding research partners and collaborators, or adding the interdisciplinary aspect to your research, our team can help to source and connect you with the appropriate researchers. For all research related inquiries please email us at:

NISTH-research@ntu.edu.sg